

Application No. 08/036,314, now abandoned, which is a Continuation of Application No. 07/580,738 filed September 10, 1990, now Patent No. 5,216,232; Application No. 08/660,643 filed June 7, 1996, now Patent No. 5,886,337; which is a Continuation of Application No. 08/293,493 filed August 19, 1994, now Patent No. 5,525,789, which is a Continuation of Application No. 07/761,123 filed September 17, 1991, now Patent No. 5,340,971, which is a CIP of Application No. 07/583,421, filed September 17, 1990, now Patent No. 5,260,553; copending Application No. 08/921,870, filed August 25, 1997, now Patent No. 5,925,871; which is a Continuation of Application No. 08/561,479 filed November 20, 1995, now Patent No. 5,661,292, which is a Continuation of Application No. 08/293,695 filed August 19, 1994, now Patent No. 5,468,951, which is a Continuation of Application No. 07/898,919 filed June 12, 1992, now Patent No. 5,340,973, and a Continuation of Application No. 07/761,123 filed September 17, 1991, now Patent No. 5,340,971; Application No. 08/827,118 filed March 27, 1997, now Patent No. 5,925,870; which is a Continuation of Application No. 08/584,135 filed January 11, 1996, now Patent No. 5,616,908, which is a Continuation of Application No. 08/278,109 filed November 24, 1993, now Patent No. 5,484,992, which is a Continuation of Application No. 07/960,733 filed October 14, 1992, now abandoned, which was a CIP of Application No. 07/898,919, filed June 12, 1992, now Patent No. 5,340,973, and a CIP of Application No. 07/761,123 filed September 17, 1991, now Patent No. 5,340,971; Application No. 08/887,756 filed July 3, 1997, now Patent No. 6,085,981; which is a Continuation of Application No. 08/632,899 filed April 16, 1996, now Patent No. 5,756,982, which is a Continuation of Application No. 08/489,305 filed June 9, 1995, now abandoned, which is a Continuation of Application No. 07/821,917 filed January 16, 1992, now abandoned, which was a CIP of Application No. 07/580,740 filed September 11, 1990, now abandoned and a CIP of Application No. 07/583,421 filed September 17, 1990, now Patent No. 5,260,553]. Each said patent application is assigned to and commonly owned by Metrologic Instruments, Inc. of Blackwood, New Jersey, and is incorporated herein by reference in its entirety.

AMENDMENT TO THE CLAIMS:

Please cancel claims 1-92 without prejudice or disclaimer and add claims 93-109 as follows:

--93. An wireless automatically-activated bar code symbol reading system for use in a work environment, said system comprising:

(A) a wireless hand-supportable bar code symbol reader in two-way RF communication with a base station operably connected to a host system, by way of an RF-based wireless data communication link having a predetermined RF communication range over which two-way communication of data packets can occur in a reliable manner, said wireless hand-supportable bar code reader symbol including

(1) a hand-supportable housing;

(2) a bar code symbol reading mechanism, disposed in said hand-supportable housing, for automatically reading a bar code symbol on an object within a first predetermined time period, and each instant said bar code symbol is read within said first predetermined time period, automatically producing a symbol character data string representative of said read bar code symbol;

(3) a first RF-based transceiver circuit, disposed in said hand-supportable housing, for transmitting to said base station groups of data packets associated with one or more of said produced symbol character data strings;

(4) a data packet group buffer, disposed in said hand-supportable housing, for buffering one or more groups of data packets associated with symbol character data strings produced in response to the reading of bar code symbols by said bar code symbol reading mechanism;

(5) a data transmission circuit, disposed in said hand-supportable housing, for transmitting a selected one of said produced symbol character data strings to either said first RF transceiver circuit or said data packet group buffer;

(6) a manually-operated data transmission activation switch, integrated with said hand-supportable housing, for generating a data transmission control activation signal in response to the activation of said manually-activatable data transmission switch within said first first predetermined time period; and

(7) a device controller, disposed within said hand-supportable housing, for controlling the operation of said wireless hand-supportable bar code symbol reader and said first RF-based transceiver circuit; and

(B) said base station installable within a work environment and including

(1) a base station housing,

(2) a second RF-based transceiver circuit, disposed within said base station housing, for receiving groups of data packets corresponding to the symbol character data strings transmitted from said first RF-based transceiver circuit, and

(3) a base station controller mounted in said base station housing, for controlling the operation of said base station;

wherein said first and second RF-based transceiver circuits enable a RF-based wireless data communication link between said wireless hand-supportable bar code reader and said base station;

wherein said first and second RF-based transceiver circuits cooperate to enable the communication of data packets between said wireless hand-supportable bar code symbol reader and said base station, over said RF-based wireless data communication link;

wherein said second RF-based transceiver includes means for automatically generating and transmitting a reference signal to said first RF-based transceiver circuit over said RF-based wireless data communication link;

wherein said first RF-based transceiver circuit includes means for automatically receiving said reference signal and detecting the strength of said reference signal;

wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and thereupon to automatically transmit to said first RF-based transceiver, the symbol character data string produced at substantially the same time when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range; and

wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and thereupon to automatically collect and store in said data packet group buffer, the symbol character data string produced at substantially the same time when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range.--

--94. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said wireless hand-supportable bar code reader further comprises an out-of-communication range indicator, integrated with said hand-supportable housing, for generating an audible and/or visual signal indicative that said wireless hand-supportable bar code symbol reader is located outside said predetermined RF communication range;

wherein said device controller for controls said data transmission circuit, said data packet group buffer and said out-of-communication range indicator.--

--95. The wireless automatically-activated bar code symbol reading system of claim 94, wherein said device controller is further programmed to cause said out-of-communication range indicator to automatically generate audible and/or visual signal when said wireless hand-supportable bar code symbol reader is detected as being located outside of said predetermined RF communication range based on measuring the strength of said detected reference signal.--

--96. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said base station further comprises: a cradle portion adapted for receiving said hand-supportable housing.--

--97. The wireless automatically-activated bar code symbol reading system of claim 96, wherein said cradle includes a radio antenna.--

--98. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said data packet group buffer is realized as a memory chip installed aboard said hand-supportable housing.--

--99. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said reference signal is a heartbeat-type signal generated from said second RF-based transceiver circuit.--

--100. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said first RF-based transceiver circuit and said device controller are realized as first RF-based chipset disposed within said hand-supportable housing.--

--101. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said second RF-based transceiver circuit and said base station controller are realized as second RF-based chipset disposed within said base station housing.--

--102. The wireless automatically-activated bar code symbol reading system of claim 93, which further comprises a good read indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said bar code symbol reading mechanism and a symbol character data string representative thereof is produced.--

--103. The wireless automatically-activated bar code symbol reading system of claim 93, which further comprises an objection detection subsystem disposed within said hand-supportable housing and including infrared (IR) signal transmission/receiving circuitry for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.--

--104. The wireless automatically-activated bar code symbol reading system of claim 93, which further comprises an objection detection subsystem disposed within said hand-supportable housing, and including low-power non-visible laser beam signaling mechanism for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.--

--105. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said device controller is further programmed so that said device controller automatically tests said RF-based wireless data communication link prior to transmitting symbol character data, stored in said data packet group buffer, to said first RF-based transceiver circuit when said data transmission control activation signal is generated while said wireless hand-supportable bar

code symbol reader is once again located inside of said predetermined RF communication range.--

--106. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said wireless bar code symbol reader further comprises three LEDs integrated with said hand-supportable housing, and wherein said device controller is programmed so that said three LEDs are illuminated to indicate that said wireless reader is located outside of said predetermined RF communication range out of range.--

--107. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said wireless hand-supportable bar code symbol reader further comprises three LEDs integrated with said hand-supportable housing, and wherein said device controller is programmed so that said three LEDs are illuminated to indicate that symbol character data is stored in said data packet group buffer waiting to be transmitted to said base station by way of said RF-based wireless data communication link.--

--108. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said device controller is programmed so that symbol character data stored within said data packet group buffer can be cleared by holding down said manually-operated data transmission activation switch for a second predetermined time duration.--

--109. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said bar code symbol reading mechanism comprises a laser scanning bar code symbol reading mechanism capable of producing a visible laser scanning pattern for automatically reading a bar code symbol on an object within a first predetermined time period, and each instant said bar code symbol is read by said visible laser scanning pattern within said first predetermined time period, automatically producing a symbol character data string representative of said read bar code symbol.--

REQUIREMENT UNDER 37 C.F.R. 1.121

As required under 37 C.F.R. 1.121, a clean set of first the paragraph on Page 1, pursuant to the above Amendment, is set forth below.

RELATED CASES

The present application is a Continuation of Application No. 10/342,433 filed January 12, 2003 which is a continuation-in-part (CIP) of: Application No. 09/452,976 filed December 2, 1999; and Application No. 09/204,176, filed December 3, 1998, now Patent 6,283,375. Each said patent application is assigned to and commonly owned by Metrologic Instruments, Inc. of Blackwood, New Jersey, and is incorporated herein by reference in its entirety.

REQUIREMENT UNDER 37 C.F.R. 1.121

As required under 37 C.F.R. 1.121, a clean set of pending claims 93-109 is set forth below.

93. An wireless automatically-activated bar code symbol reading system for use in a work environment, said system comprising:

(A) a wireless hand-supportable bar code symbol reader in two-way RF communication with a base station operably connected to a host system, by way of an RF-based wireless data communication link having a predetermined RF communication range over which two-way communication of data packets can occur in a reliable manner, said wireless hand-supportable bar code reader symbol including

(1) a hand-supportable housing;

(2) a bar code symbol reading mechanism, disposed in said hand-supportable housing, for automatically reading a bar code symbol on an object within a first predetermined time period, and each instant said bar code symbol is read within said first predetermined time period, automatically producing a symbol character data string representative of said read bar code symbol;

(3) a first RF-based transceiver circuit, disposed in said hand-supportable housing, for transmitting to said base station groups of data packets associated with one or more of said produced symbol character data strings;

(4) a data packet group buffer, disposed in said hand-supportable housing, for buffering one or more groups of data packets associated with symbol character data strings produced in response to the reading of bar code symbols by said bar code symbol reading mechanism;

(5) a data transmission circuit, disposed in said hand-supportable housing, for transmitting a selected one of said produced symbol character data strings to either said first RF transceiver circuit or said data packet group buffer;

(6) a manually-operated data transmission activation switch, integrated with said hand-supportable housing, for generating a data transmission control activation signal in response to the activation of said manually-activatable data transmission switch within said first first predetermined time period; and



(7) a device controller, disposed within said hand-supportable housing, for controlling the operation of said wireless hand-supportable bar code symbol reader and said first RF-based transceiver circuit; and

(B) said base station installable within a work environment and including

(1) a base station housing,

(2) a second RF-based transceiver circuit, disposed within said base station housing, for receiving groups of data packets corresponding to the symbol character data strings transmitted from said first RF-based transceiver circuit, and

(3) a base station controller mounted in said base station housing, for controlling the operation of said base station;

wherein said first and second RF-based transceiver circuits enable a RF-based wireless data communication link between said wireless hand-supportable bar code reader and said base station;

wherein said first and second RF-based transceiver circuits cooperate to enable the communication of data packets between said wireless hand-supportable bar code symbol reader and said base station, over said RF-based wireless data communication link;

wherein said second RF-based transceiver includes means for automatically generating and transmitting a reference signal to said first RF-based transceiver circuit over said RF-based wireless data communication link;

wherein said first RF-based transceiver circuit includes means for automatically receiving said reference signal and detecting the strength of said reference signal;

wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and thereupon to automatically transmit to said first RF-based transceiver, the symbol character data string produced at substantially the same time when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is located inside of said predetermined RF communication range; and

wherein said device controller is programmed to automatically detect when said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range based on measuring the strength of said detected reference signal, and

thereupon to automatically collect and store in said data packet group buffer, the symbol character data string produced at substantially the same time when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is located outside of said predetermined RF communication range.

94. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said wireless hand-supportable bar code reader further comprises an out-of-communication range indicator, integrated with said hand-supportable housing, for generating an audible and/or visual signal indicative that said wireless hand-supportable bar code symbol reader is located outside said predetermined RF communication range;

wherein said device controller for controls said data transmission circuit, said data packet group buffer and said out-of-communication range indicator.

95. The wireless automatically-activated bar code symbol reading system of claim 94, wherein said device controller is further programmed to cause said out-of-communication range indicator to automatically generate audible and/or visual signal when said wireless hand-supportable bar code symbol reader is detected as being located outside of said predetermined RF communication range based on measuring the strength of said detected reference signal.

96. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said base station further comprises: a cradle portion adapted for receiving said hand-supportable housing.

97. The wireless automatically-activated bar code symbol reading system of claim 96, wherein said cradle includes a radio antenna.

98. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said data packet group buffer is realized as a memory chip installed aboard said hand-supportable housing.

99. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said reference signal is a heartbeat-type signal generated from said second RF-based transceiver circuit.
100. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said first RF-based transceiver circuit and said device controller are realized as first RF-based chipset disposed within said hand-supportable housing.
101. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said second RF-based transceiver circuit and said base station controller are realized as second RF-based chipset disposed within said base station housing.
102. The wireless automatically-activated bar code symbol reading system of claim 93, which further comprises a good read indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said bar code symbol reading mechanism and a symbol character data string representative thereof is produced.
103. The wireless automatically-activated bar code symbol reading system of claim 93, which further comprises an objection detection subsystem disposed within said hand-supportable housing and including infrared (IR) signal transmission/receiving circuitry for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.
104. The wireless automatically-activated bar code symbol reading system of claim 93, which further comprises an objection detection subsystem disposed within said hand-supportable housing, and including low-power non-visible laser beam signaling mechanism for automatically detecting said object within an object detection field definable relative to said hand-supportable housing.
105. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said device controller is further programmed so that said device controller automatically tests

said RF-based wireless data communication link prior to transmitting symbol character data, stored in said data packet group buffer, to said first RF-based transceiver circuit when said data transmission control activation signal is generated while said wireless hand-supportable bar code symbol reader is once again located inside of said predetermined RF communication range.

106. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said wireless bar code symbol reader further comprises three LEDs integrated with said hand-supportable housing, and wherein said device controller is programmed so that said three LEDs are illuminated to indicate that said wireless reader is located outside of said predetermined RF communication range out of range.

107. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said wireless hand-supportable bar code symbol reader further comprises three LEDs integrated with said hand-supportable housing, and wherein said device controller is programmed so that said three LEDs are illuminated to indicate that symbol character data is stored in said data packet group buffer waiting to be transmitted to said base station by way of said RF-based wireless data communication link.

108. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said device controller is programmed so that symbol character data stored within said data packet group buffer can be cleared by holding down said manually-operated data transmission activation switch for a second predetermined time duration.

109. The wireless automatically-activated bar code symbol reading system of claim 93, wherein said bar code symbol reading mechanism comprises a laser scanning bar code symbol reading mechanism capable of producing a visible laser scanning pattern for automatically reading a bar code symbol on an object within a first predetermined time period, and each instant said bar code symbol is read by said visible laser scanning pattern within said first predetermined time period, automatically producing a symbol character data string representative of said read bar code symbol.